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ONS-2015-074

June 12, 2015

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555

10 CFR 50.55a

Duke Energy Carolinas, LLC (Duke Energy)
Oconee Nuclear Station, Units 1 and 2.
Docket Numbers 50-269 and 50-270
Renewed License Numbers DPR-38 and DPR-47

Subject: Fifth Ten Year Inservice Inspection Interval, Relief Request No. 15-ON-001; Alternative to Defect Removal Prior to Repair/Replacement Activities on Low Pressure Service Water System Piping

References:

1. Duke Energy Letter, Oconee, Units 1, 2 and 3 - *Fifth Interval Inservice Inspection Plan*, dated July 15, 2014, (ADAMS Accession No. ML14202A008)

Pursuant to 10 CFR 50.55a(z)(2), Duke Energy requests the NRC to grant relief from Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) for the specific repair/replacement activity identified in this request. The basis for the Relief Request is that the ASME Code requirements applicable to Oconee's fifth ISI Interval create a hardship or unusual difficulty without a compensating increase in the level of quality and safety. The Relief Request addresses the need to encapsulate a degrading moderate energy Class 3 ISI pressure boundary with new pressure boundary material, without removing the degraded piping.

If degradation reaches a point where a Code repair/replacement is imminent, this relief will facilitate a repair in a manner that averts a multiple unit shutdown. Because of this potential impact, Duke Energy's desire is that this Relief Request receive review and approval as soon as practical and at least by December 1, 2015. Relief Request 15-ON-001 is provided as an enclosure to this letter.

If there are any questions or further information is needed you may contact David Haile at (864) 873-4742,

Sincerely,

Scott L. Batson
Vice President
Oconee Nuclear Station

Enclosure

Relief Request Serial #15-ON-001: Relief Request in Accordance with 10 CFR 50.55a(z)(2) to use an Alternative to Defect Removal Prior to Performing Repair/Replacement Activities on Low Pressure Service Water System Piping

A047
NRR

cc (with enclosure):

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Oconee Nuclear Station

Enclosure to ONS-2015-074

Duke Energy Carolinas, LLC

Oconee Nuclear Station, Units 1 and 2

Relief Request Serial #15-ON-001

Relief Request in Accordance with 10 CFR 50.55a(z)(2) to use an Alternative to Defect Removal Prior to Performing Repair/Replacement Activities on Low Pressure Service Water System Piping

1. ASME Code Component(s) Affected

Oconee Nuclear Station, Units 1 and 2 Low Pressure Service Water (LPSW) System piping listed below:

1.1. The 3 inch piping between valve LPSW-30 and the 36 inch LPSW header, as shown on drawing OFD-124A-1.1 and attached sketches. This piping was constructed to USAS B31.1-1967, is classified as Class 3, and is subject to the repair/replacement requirements of the ASME Code, Section XI, IWA-4000. This piping is shared between Units 1 and 2. This piping supplies cooling water to the Motor Driven Emergency Feedwater Pumps (MDEFWP) for both Units 1 and 2. Cooling water is required for these pumps to be operable; per Technical Specification 3.7.5, if two MDEFWPs are inoperable, one must be restored to operable within 12 hours, or shutdown to MODE 3 is required.

1.2. Design data applicable to the above piping is provided below from Duke Energy Specification OS-0243.00-00-0001 and Oconee Flow Diagram OFD-124A-1.1:

Nominal Wall Thickness:	0.216 inches (pipe schedule 40)
Design Pressure:	100 psig
Design Temperature:	100 degrees, F
Material Specification:	Carbon Steel, SA-106 Gr B

2. Applicable Code Edition and Addenda

2.1 The ASME Code, Section XI, 2007 Edition with the 2008 Addenda is used for the Oconee Units 1 and 2, 5th Inservice Inspection Interval.

2.2 The 5th Inservice Inspection Interval for Oconee Units 1 and 2 began on July 15, 2014 and is scheduled to end on July 14, 2024.

3. Applicable Requirements

3.1 IWA-4421 requires that defects be removed or mitigated in accordance with IWA-4340, IWA-4411, IWA-4461, or IWA-4462.

[Note: Use of IWA-4340 is prohibited by 10 CFR 50.55a(b)(2)(xxv)]

4. Reason for Request

4.1. Relief is requested from the requirement of IWA-4421 to remove defects in accordance with IWA-4411, IWA-4461, or IWA-4462 on the piping identified in this request, prior to performing repair/replacement activities.

4.2. This request is submitted to allow the installation of pressure retaining parts that will be used to encapsulate locally thinned areas of the 3 inch LPSW piping between valve LPSW-30 and the 36 inch LPSW header. Installation of replacement pressure retaining parts without first removing the degraded portions of the piping does not comply with the requirement of IWA-4421.

4.3. The proposed alternative has been developed because other repair/replacement options that would fully comply with IWA-4421 create a hardship or unusual difficulty without a compensating increase in the level of quality and safety, for reasons detailed in this request.

5. Proposed Alternative and Basis for Use

5.1 Proposed Alternative

In lieu of the requirement of IWA-4421 to remove the defective portion of the component prior to performing repair/replacement activities by welding, unacceptable wall thickness loss or through-wall leakage caused by localized general or pitting corrosion shall be corrected by installation of replacement pressure retaining parts that fully encapsulate the degraded piping. The following requirements shall be met:

1. Replacement pressure retaining parts shall comply with the Construction Code (ASME B31.1-2007) and Owner's requirements, as shown in Sketches 1 to 7 (Attachment 1). The modification has been designed such that the piping system no longer relies on the encapsulated parts for structural integrity or leak tightness.
2. Prior to installation of replacement pressure retaining parts, an ultrasonic examination, utilizing the processes contained in Generic Ultrasonic procedure PDI UT-1, shall be performed to characterize the defective and locally thinned area(s) and to confirm the absence of cracks or crack-like indications. In addition, previous replacements confirm corrosion. Ultrasonic thickness measurements shall also be performed where the encapsulation is to be welded to the 36 inch pipe header (see Attachment 1, Sketch 3) to confirm that material thickness is adequate for the encapsulation design. The other end of the encapsulation shall be welded to the hub of the weld neck flange (which was installed in November, 2014 per Work Order 02174379).
3. The locations where the encapsulation is to be welded to the system pressure boundary are located sufficiently far from locations of identified wall thinning to preclude the growth of identified corrosion from challenging the integrity of the encapsulation for the remaining life of the component to which the encapsulation is welded. The 36 inch header pipe will continue to be monitored as part of the Service Water Piping Corrosion Program.
4. A visual examination shall be performed on welds for the replacement pressure retaining parts in accordance with ASME B31.1-2004, Table 136.4.
5. A hydrostatic pressure test shall be performed in accordance with ASME Section XI, 2007 edition with 2008 addenda, IWA-4540, IWA-5000 and IWD-5230 using an external pressurization source upon completion of the repair/replacement activity to confirm the leak-tight integrity of the modification and its connecting welds to the component pressure boundary.
6. Following pressure testing, sealant shall be installed into the encapsulation to inhibit corrosion that could result from any future through-wall defects in the encapsulated piping, and threaded fittings shall be installed and seal welded to the threaded couplings.
7. Encapsulation of the defective or locally thinned area(s) at this location shall be performed only once.

5.2 Basis for Request

Duke Energy believes that complying with IWA-4421 requirements to remove defective portions of this piping prior to performing a repair/replacement activity represents a hardship or unusual difficulty without a compensating increase in the level of quality and safety for the following reasons:

5.2.1 Removal of defective portions of this piping would require that the piping be isolated and depressurized. The 3 inch piping cannot be isolated for the following reasons:

1. Previous attempts to close valves LPSW-30, LPSW-32, LPSW-33, and LPSW-34 and drain through valve LPSW-970 have not provided adequate isolation of this piping. Oconee believes that the source of valve leakage preventing isolation is from one or both of valves LPSW-33 and LPSW-34. System isolation using upstream valves is not possible due to requirements of Technical Specification 3.7.7.
2. System isolation needed to allow repair of valves LPSW-33 and LPSW-34 is not possible due to requirements of Technical Specification 3.7.7 (two LPSW pumps inoperable). As a result, repair of these valves would require a dual Unit 1 and 2 outage, with both cores offloaded to the Unit 1/Unit 2 spent fuel pool. Further complicating this issue is the fact that the Unit 1/Unit 2 spent fuel pool does not have the capacity to simultaneously dissipate the heat load from two recently off-loaded cores for at least 25 days post-shutdown.
3. Installation of a mechanical line stop in the 3 inch piping is possible. However, because some of the thinned sections of the 3 inch piping are located very close to the 36 inch header, it will not be possible to isolate all of the affected piping to allow removal of defective portions of the pipe. In addition, installation of a line stop will result in a permanent branch connection on the 3 inch piping where stagnant water could lead to further corrosion of the 3 inch piping.
4. Installation of mechanical line stops in the 36 inch piping is possible. However, this is not desirable because this activity could result in metal shavings or the removed portion of the pipe wall dislodging, entering the system, and becoming debris that could hinder system operation and make it difficult to retrieve the loose material.
5. Use of a freeze seal to isolate the 3 inch pipe has been performed successfully to allow replacement of approximately four feet of the 3 inch piping just upstream of valve LPSW-30. However, there is very little piping left that can be replaced using a freeze seal. Therefore, this request would still be needed for any of the remaining piping that will require repair.

5.2.2 Use of other alternative repair/replacement techniques that would avoid having to isolate and depressurize the 3 inch piping were considered, but were rejected for reasons identified below:

1. Use of ASME Code Cases N-562-2 or N-661-2

   Use of repair/replacement techniques detailed in Code Cases N-562-2 or N-661-2 are not possible because the remaining wall thickness of the degraded piping is considered insufficient to perform these types of repairs without risking "burn-through" during welding that could result in through wall leakage, presenting an unacceptable risk to the operation of the system. Also, because the remaining wall thickness of the degraded piping at a number of locations on this piping is less than the 3/32 inch diameter commercially available Shielded Metal Arc Welding (SMAW) welding electrodes that would be used to perform repair/replacement activities using these Code Cases, NRC Regulatory Guide 1.147, Rev. 17, Table 2 requires that the piping system be depressurized prior to welding.

2. Use of ASME Code Case N-786

   Installation of a full-structural Type B reinforcing sleeve in accordance with Code Case N-786, Figure 2 was considered, but was rejected because degraded portions of the 3 inch piping are located very close to the 36 inch diameter LPSW header, making it difficult to install the reinforcing sleeve without risking "burn-through" during welding. Because Code Case N-786 is not approved for use in NRC Regulatory Guide 1.147, Rev. 17, relief would also be required to use this case.

3. Use of ASME Code Case N-789-1

   Use of Code Case N-789-1 to install reinforcing pads over locally thinned areas is not possible because paragraph 1(e) of the case allows the reinforcing pads to be used only until the next refueling outage. Difficulty with isolating and depressurizing the system during the next refueling outage would still occur. Welding would be required at locations where the 3 inch piping is degraded, so use of this case would be challenging without risking "burn-through" during welding. Because N-789-1 is not approved for use in NRC Regulatory Guide 1.147, Rev. 17, relief would also be required in order to use this case.

5.2.3 The proposed alternative shall be designed, constructed, and examined in accordance with all applicable requirements of the Construction Code. All welds shall be visually examined in accordance with ASME B31.1-2004. The encapsulation shall be pressure tested and VT-2 examined in accordance with IWA-4540 to confirm the absence of leakage from the replacement pressure retaining parts and their connecting welds. All other requirements of ASME Code, Section XI, for which relief has not been specifically requested, remain applicable including third-party review by the Authorized Nuclear Inservice Inspector. For these reasons, Oconee believes that the proposed alternative to IWA-4421 will provide reasonable assurance of continued structural integrity of the component.

6. Duration of Proposed Alternative

The proposed alternative is requested for the remaining life of the plant, or until such time that further repair/replacement activities are required for the affected portions of the LPSW system piping, whichever comes first.

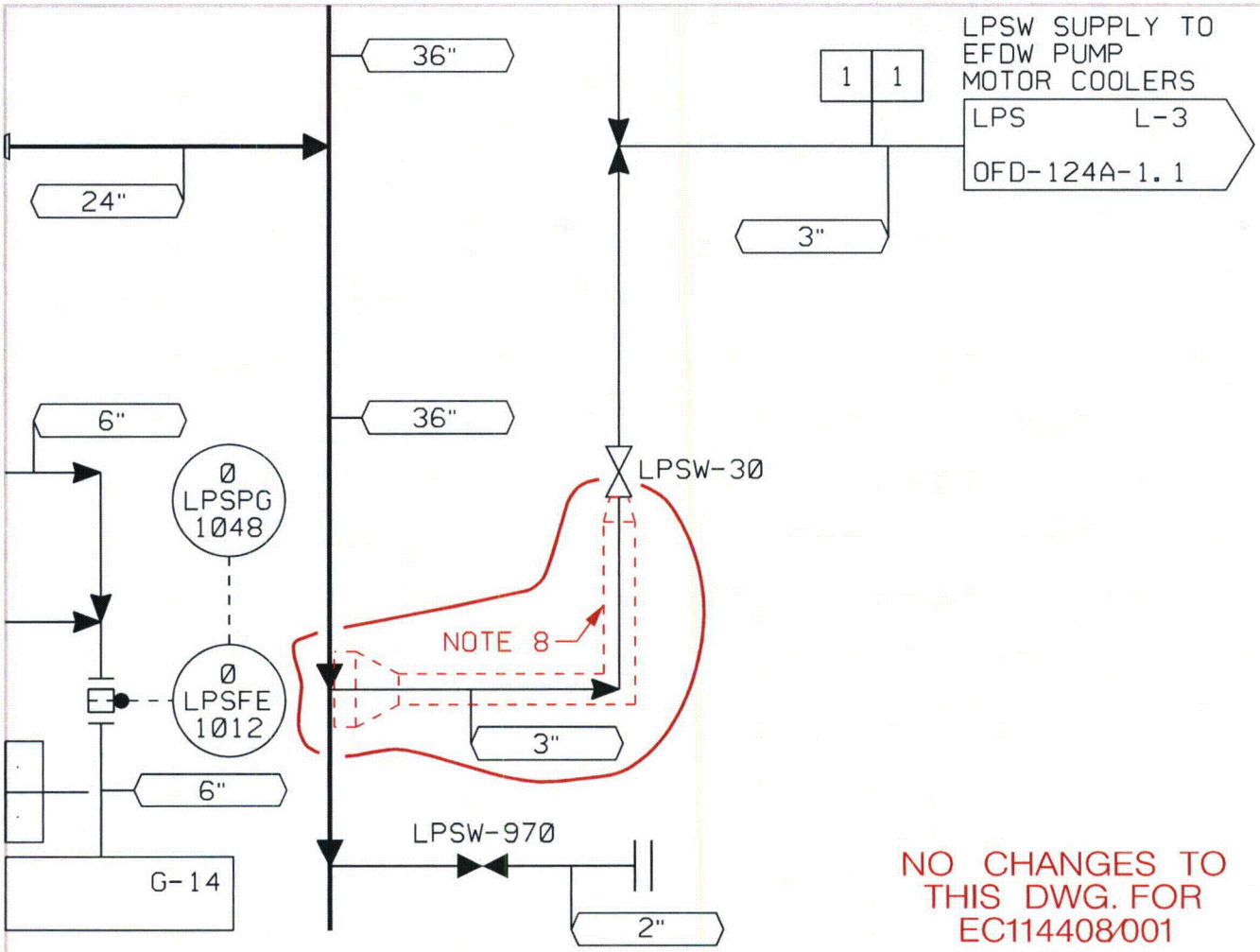
7. References

Letter dated March 28, 2011, transmitting the NRC Safety Evaluation for McGuire Nuclear Station Unit 1 Relief Request Serial #09-MN-002, Revision 1 (ML110800426)

8. Attachments

Attachment 1: Engineering Change EC 114408 Sketches 1 through 7

Attachment 2: Oconee Flow Diagram, OFD-124A-1.1



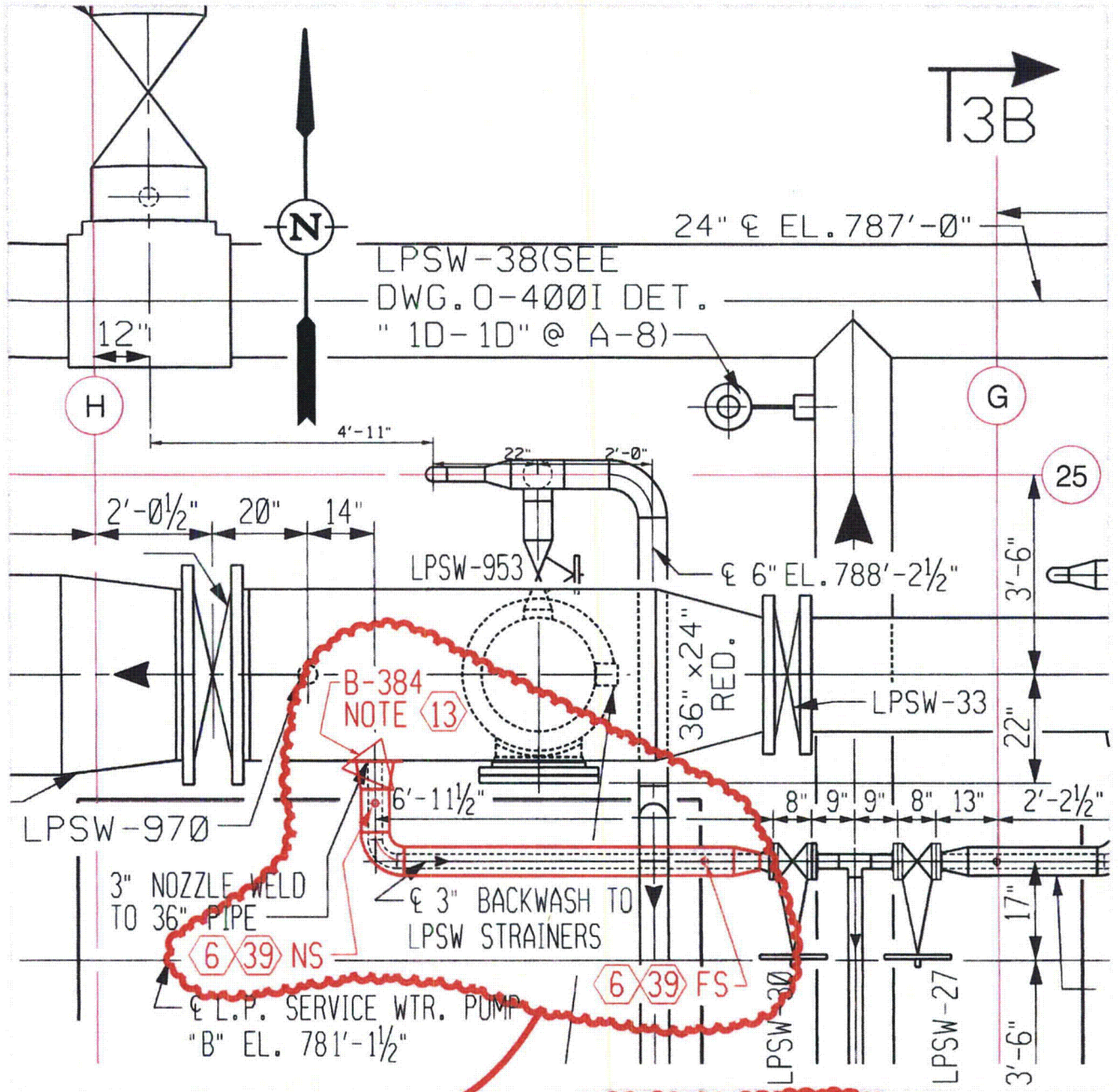
DESIGN PARAMETERS

LINE NO.	DUKE CLASS	DESIGN PRESS.	DESIGN TEMP	MATERIAL	PIPE SPEC. NO.	PIPE SCH. NO.	ISI CLASS
1	F	100 PSIG	100°F	CS(NOTE 7)	150.4(NOTE 7)	SEE NOTE 3	C

3. 1/2" THRU 10 " SCH. 40
   12" THRU 48" STD.
7. STAINLESS STEEL (PS-151.4) MAY BE SUBSTITUTED FOR PIPE SIZES 1/2" THRU 6". EXISTING PIPING MAY BE OF AUSTENITIC STAINLESS STEEL MATERIAL OR OF CARBON STEEL TO THE APPLICABLE "PS" INDICATED. PIPING ENGINEERING APPROVAL IS REQUIRED PRIOR TO ANY CHANGE OF THE EXISTING MATERIAL. SEE NOTE 24 IN APPENDIX C, MATERIAL REQUIREMENTS, OF OS-243.00-00-0001.
8. 8",6"& 3 1/2" PIPE AND FITTINGS ADDED TO MAINTAIN PRESSURE BOUNDARY DUE TO SIGNIFICANT CORROSION OF 3" PIPE WALL THICKNESS.

QA CONDITION 1	DUKE ENERGY OCONEE NUCLEAR STATION	EC 114408 /001 SKETCH 1

OFD–124A–1.1 Rev. 49 MSI



EC 114408/001

SEE SKETCH 3 FOR ENCAPSULATED PIPE DETAILS

NOTES:

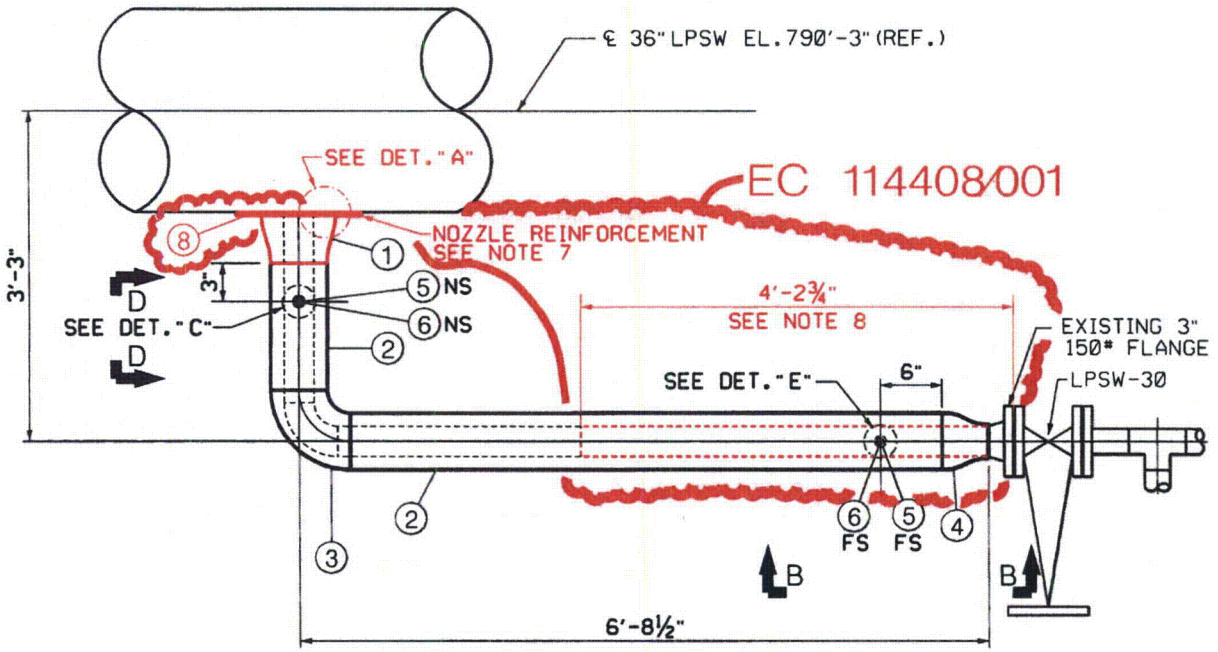
(6) ½" 3000# FS SCR'D. H/CPLG.

(13) △ DENOTES BRANCH REINFORCEMENT - SEE DRAWING O-408 FOR DETAILS.

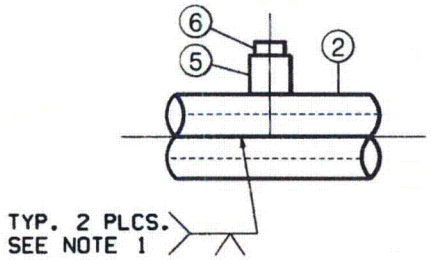
(39) ½" CS THR'D. PLUG

QA CONDITION 1,3,4 | DUKE ENERGY OCONEE NUCLEAR STATION | EC 114408/001 SKETCH 2

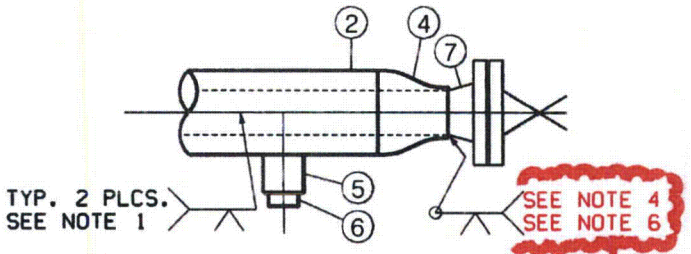
O-400B Rev. 160 MSI



PLAN

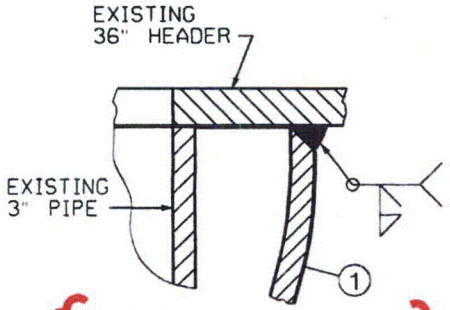


SECTION "D–D"



SECTION "B–B"

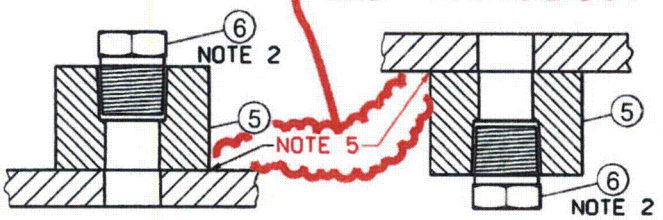
EC 114408/001



NOZZLE REINFORCEMENT PAD NOT SHOWN FOR CLARITY.

EC 114408/001

DETAIL "A"



DETAIL "C"

DETAIL "E"

QA CONDITION 1,3,4 | DUKE ENERGY OCONEE NUCLEAR STATION | EC 114408/001 SKETCH 3

O-400W Rev. 9 MSI

EC 114408/001

BILL OF MATERIALS				
Item	Qty.	Size	Description	Code No.(Info Only)
1	1	8" x 6"	REDUCER, CONC., CS, SA234, WPB, BW, SMLS, SCH. 40	159177
2	9 FT	6"	PIPE, CS, SA106, Cl. B, SMLS, SCH. 40	149338
3	1	6"	ELBOW, 90°, SR, CS, SA234, WPB, SCH. 40	80305
4	1	6" x 3½"	REDUCER, CONC., CS, SA234, WPB, BW, SCH. 40	883553
5	2	1/2"	COUPLING, HALF, CS, SA105, THD, 3000#	68478
6	2	1/2"	PLUG, CS, SA105, HEX, THD	153979
7				
8	1	⅜" THK.	PLATE, CS, A36, HOT ROLLED, 15.30	151026
9				
10				

SYSTEM	PIPE CLASS	PIPE SPEC.	REF. DWGS.
LPSW	F	150.4/151.4	OFD-124A-1.1

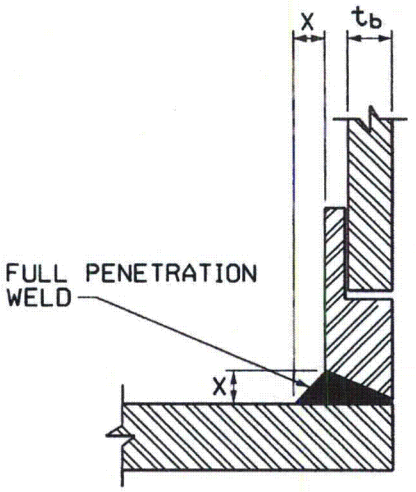
NOTES:

1. ITEMS 1, 2, 3 & 4 TO BE CUT IN HALF ALONG THE HORIZONTAL PLANE.
2. THE ½" PLUG (ITEM 6) IS TO BE LEFT OFF UNTIL ALL WELDING AND TESTING IN THE FIELD IS COMPLETED. CONTACT DESIGN ENGINEERING PRIOR TO INSERTING AND SEAL WELDING DRAIN AND VENT PLUGS.
3. LOCATE ONE HALF-COUPLING IN TOP OF THE 6" PIPE (ITEM 2) AND ONE HALF-COUPLING ON THE BOTTOM OF THE 6" PIPE.
4. 6" x 3½" REDUCER MAY OVERLAP THE END OF THE EXISTING 3" WELD NECK FLANGE. THE REDUCER WILL BE WELDED TO THE SLOPE OF THE FLANGE.
5. WELD PER DETAIL "C" ON DRAWING O-499C. SEE SKETCH 5 FOR DETAIL.
6. 3½" END OF REDUCER MAY BE MACHINED TO A MINIMUM OF 0.200" WALL THICKNESS TO AVOID INTERFERENCES.
7. WELD PER DETAIL "F" ON DRAWING O-499C. SEE SKETCH 6 FOR DETAIL.
8. THIS SECTION OF 3" PIPE HAS BEEN CUT OUT AND REPLACED.

EC 114408/001

QA CONDITION 1,3,4 | DUKE ENERGY OCONEE NUCLEAR STATION | EC 114408/001 SKETCH 4

O-400W Rev. 9 MSI



NOMENCLATURE:

t_b = NOM. BRANCH PIPE WALL THICKNESS

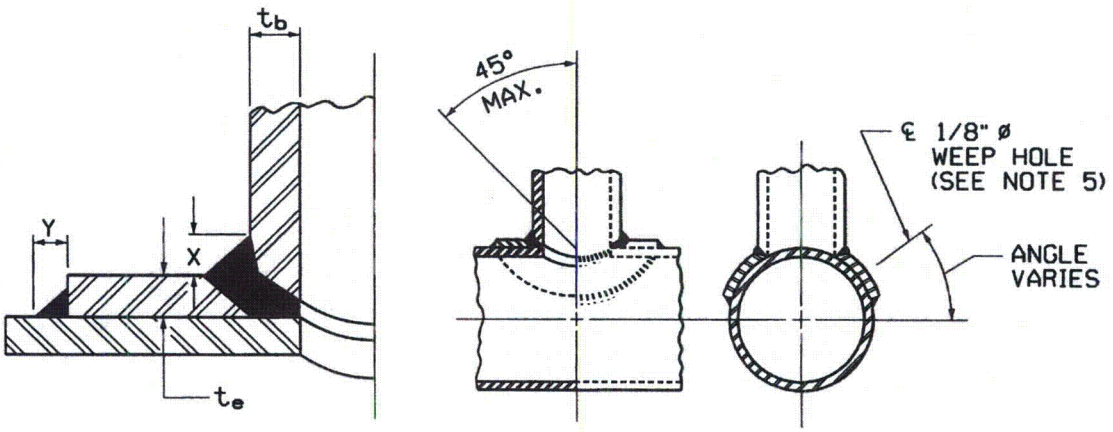
X = LESSER OF t_b OR 0.357"

DETAIL "C"

90° HALF COUPLING NOZZLE WELDS
2" AND SMALLER
THICKNESSES: UNLIMITED
CLASSES: ALL
MATERIALS: ALL

THIS SKETCH IS INCLUDED ONLY
TO PROVIDE WELDING INFORMATION.
THERE ARE NO CHANGES
TO O-499C PER EC114408 /001.

QA CONDITION 1,2,3,4	DUKE ENERGY OCONEE NUCLEAR STATION	EC 114408/001 SKETCH 5
O-499C	Rev. 16	MSI



TYPICAL WELDING BRANCH CONNECTION
WITH ADDITIONAL REINFORCEMENT

NOMENCLATURE:

X = t_b OR 0.357" (LESSER), ALSO SEE NOTE 6
t_e = THICKNESS OF REINFORCING RING
Y = .707 t_e

DETAIL "F"

BRANCH NOZZLE JOINT REQUIREMENTS
THICKNESSES: UNLIMITED
CLASSES: E, F, G, H
MATERIALS: ALL

5. WEEP HOLE LOCATED APPROX. ±90° FROM CROTCH.

6. IF BRANCH O.D. 75% OF HEADER O.D. A PROGRESSIVE CHANGE IN WELD PATTERN SHOULD BE MADE APPROACHING ±90° FROM CROTCH AS REQUIRED TO MAINTAIN A SMOOTH TRANSITION BETWEEN JOINED PARTS.

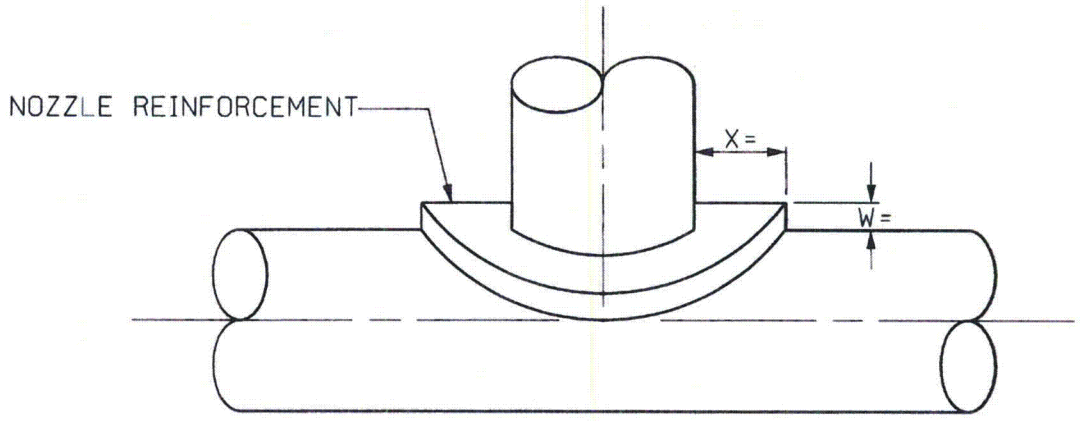
7. NOZZLE REINFORCEMENT REQUIRES A FULL PENETRATION WELD FOR THE INSTALLATION OF TWO REINFORCEMENT COLLAR HALVES.

THIS SKETCH IS INCLUDED ONLY
TO PROVIDE WELDING INFORMATION.
THERE ARE NO CHANGES
TO O-499C PER EC114408 /001.

QA CONDITION 1,2,3,4 | DUKE ENERGY OCONEE NUCLEAR STATION | EC 114408/001 SKETCH 6

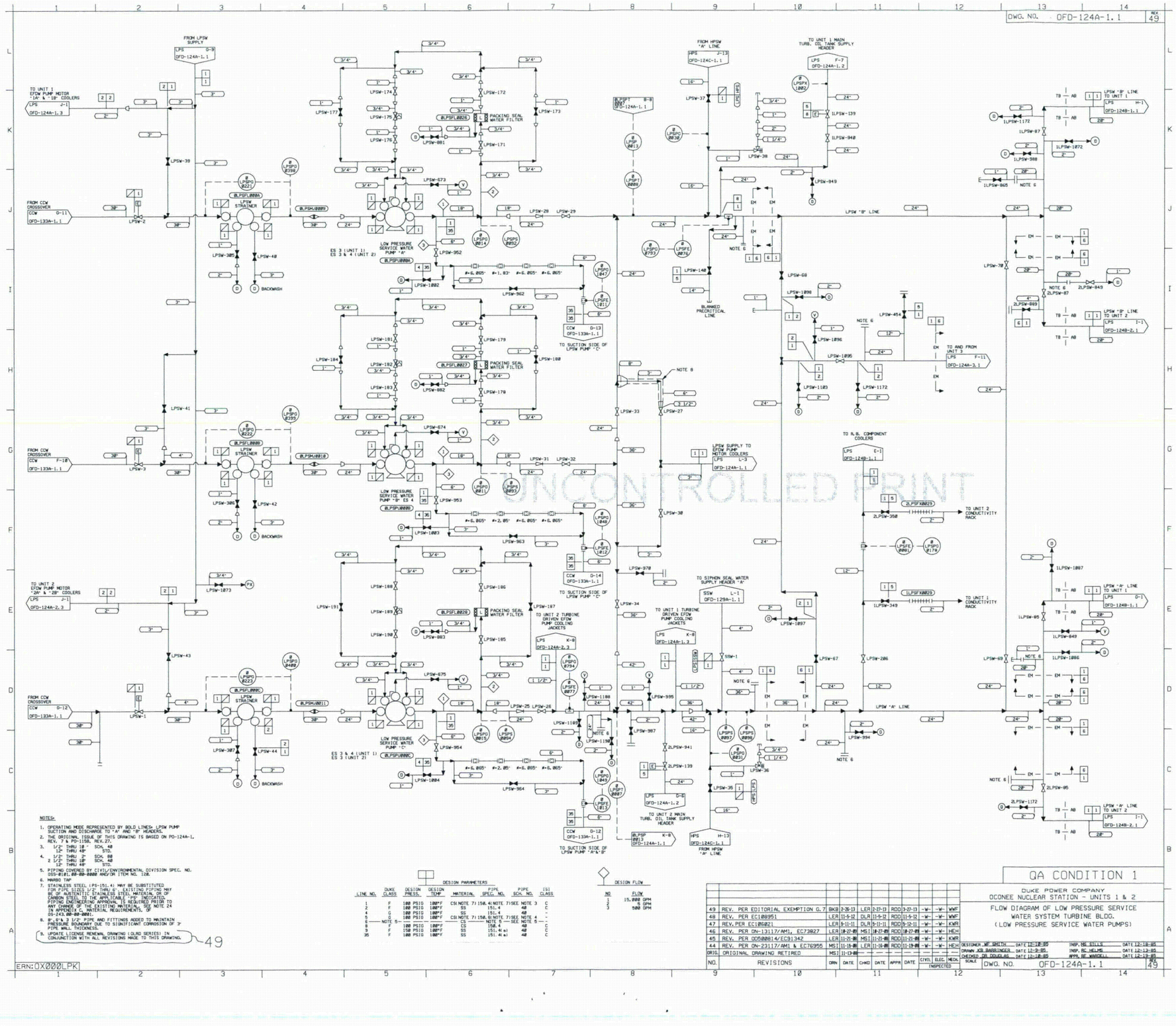
O-499C Rev. 16 MSI

BRANCH NO.	SYSTEM NO.	DRAWING NO.	LOCATION	ADDITIONAL REINFORCEMENT REQ'D			COLLAR MATERIAL	REASON COLLAR (NOTE 1)
				RING SIZE		INCREASE FILLET WELD SIZE "Z" TO:		
				THICKNESS "W" (IN INCHES)	WIDTH "X" (IN INCHES)			
B-319	07	O-400B	J-6	0.401	2		EXISTING	R
B-320	07	O-402A	C-3	0.511	4		EXISTING	R
B-321	07	O-402A	C-6	0.499	3.5		EXISTING	R
B-322	07	O-402A	C-8	0.618	4		EXISTING	R
B-323	07	O-402A	D-3	0.470	2.5		EXISTING	R
B-324	07	O-400B	I-8	0.716	6.5		EXISTING	R
B-325	07	O-400A	E-4	0.768	9		EXISTING	R
B-326	07	O-400C	D-10	0.728	9		EXISTING	R
B-375	03.A	O-400W	G-2	0.500	1.3125		A36	R
B-376	54.A	O-439F	G-11	0.375	1.5		A240,304SS	R
B-377	54.A	O-439F	F-13	0.375	1.5		A240,304SS	R
B-378	54.A	O-439B	C-12	0.375	1.5		A240,304SS	R
B-379*	14B(1)	O-439B	I-5	0.625	2.5		A36	F
B-380*	14B(1)	O-439B	I-5	0.625	2.5		A36	F
B-381*	14B(1)	O-439B	I-5	0.625	2.5		A36	F
B-382	03	O-403F	C-6	0.625	1.0625		SA516-70	R
B-383*	13	O-439D	A-6	0.500	1.0		A36	F
B-384	14B	O-400B	G-7	0.375	3.0		A36	R



QA CONDITION 1 | DUKE ENERGY OCONEE NUCLEAR STATION | EC 114408 /001 SKETCH 7

O408 Rev. 20 MSI



NOTES:

1. OPERATING MODE REPRESENTED BY BOLD LINES- LPSW PUMP SUCTION AND DISCHARGE TO "A" AND "B" HEADERS.
2. THE ORIGINAL ISSUE OF THIS DRAWING IS BASED ON PO-124A-1, REV. 7 & PO-115B, REV.27.
3. 1/2" THRU 1 1/2" SCH. 40
   2" THRU 4" STD.
4. 1/2" THRU 2" SCH. 80
   2 1/2" THRU 12" SCH. 40
   12" THRU 48" STD.
5. PIPING COVERED BY CIVIL/ENVIRONMENTAL DIVISION SPEC. NO. OSS-0181.00-00-0000 AND/OR ITEM NO. 128.
6. MARKED TAP
7. STAINLESS STEEL (PS-151.4) MAY BE SUBSTITUTED FOR PIPE SIZES 1/2" THRU 6". EXISTING PIPING MAY BE OF AUSTENITIC STAINLESS STEEL MATERIAL OR OF CARBON STEEL TO THE APPLICABLE "PS" INDICATED. PIPING ENGINEERING APPROVAL IS REQUIRED PRIOR TO ANY CHANGE OF THE EXISTING MATERIAL. SEE NOTE 24 IN APPENDIX C, MATERIAL REQUIREMENTS, OF OS-243.00-00-0001.
8. 8", 6"& 3 1/2" PIPE AND FITTINGS ADDED TO MAINTAIN PRESSURE BOUNDARY DUE TO SIGNIFICANT CORROSION OF 3" PIPE WALL THICKNESS.
9. UPDATE LICENSE RENEWAL DRAWING (OLRD SERIES) IN CONJUNCTION WITH ALL REVISIONS MADE TO THIS DRAWING. 49

DESIGN PARAMETERS

LINE NO.	DUKE CLASS	DESIGN PRESS.	DESIGN TEMP.	MATERIAL	PIPE SPEC. NO.	PIPE SCH. NO.	ISI CLASS
1	F	100 PSIG	100°F	CS| NOTE 7| 150.4	NOTE 7| SEE NOTE 3	C
2	F	100 PSIG	100°F	SS	151.4	40	-
4	G	100 PSIG	100°F	SS	151.4	40	-
5	G	100 PSIG	100°F	CS| NOTE 7| 150.5| NOTE 7| SEE NOTE 4			-
6	NOTE 5	100 PSIG	100°F	CS	NOTE 5	SEE NOTE 5	C
9	F	100 PSIG	100°F	CS	150.4	40	C
9	F	150 PSIG	100°F	SS	151.4(a)	40	C
35	F	100 PSIG	100°F	SS	151.4(a)	40	C

DESIGN FLOW

NO	FLOW
1	15,000 GPM
2	0 GPM
3	500 GPM

QA CONDITION 1

NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE
49	REV. PER EDITORIAL EXEMPTION Q.7	BKB	2-26-13	LER	2-27-13	RDD	3-27-13
48	REV. PER EC180951	LER	11-5-12	DLR	11-5-12	RDD	11-5-12
47	REV. PER EC180821	LER	5-11-11	DLR	5-11-11	RDD	5-12-11
46	REV. PER ON-13117/AM1, EC73827	LER	12-27-06	MSI	12-27-06	RDD	12-27-06
45	REV. PER OD500814/EC91342	LER	11-21-06	MSI	11-21-06	RDD	11-21-06
44	REV. PER ON-23117/AM1 & EC76995	MSI	11-16-06	LER	11-16-06	RDD	11-13-06
ORIG.	ORIGINAL DRAWING RETIRED	MSI	11-13-06	—	—	—	—

CIVIL	ELEC.	MECH.
-W-	-W-	WWF
-W-	-W-	WWF
-W-	-W-	KWR
-W-	-W-	HEH
-W-	-W-	KWR
-W-	-W-	HEH
—	—	—

DUKE POWER COMPANY
OCONEE NUCLEAR STATION - UNITS 1 & 2

FLOW DIAGRAM OF LOW PRESSURE SERVICE WATER SYSTEM TURBINE BLDG. (LOW PRESSURE SERVICE WATER PUMPS)

DESIGNED MF SMITH	DATE 12-18-85	INSP. MS SILLS	DATE 12-18-85
DRAWN KB BARRINGER	DATE 12-9-85	INSP. RC HELMS	DATE 12-13-85
CHECKED DR DOUGLAS	DATE 12-18-85	APPR. RE WINDELL	DATE 12-19-85

SCALE: NONE DWG. NO. OFD-124A-1.1 REV 49

ERN:0X000LPK